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High Performance Network Security



FIM-7904E Interface Module Guide



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Friday, June 23, 2017

FIM-7904E Interface Module Guide

01-540-374567-20170623

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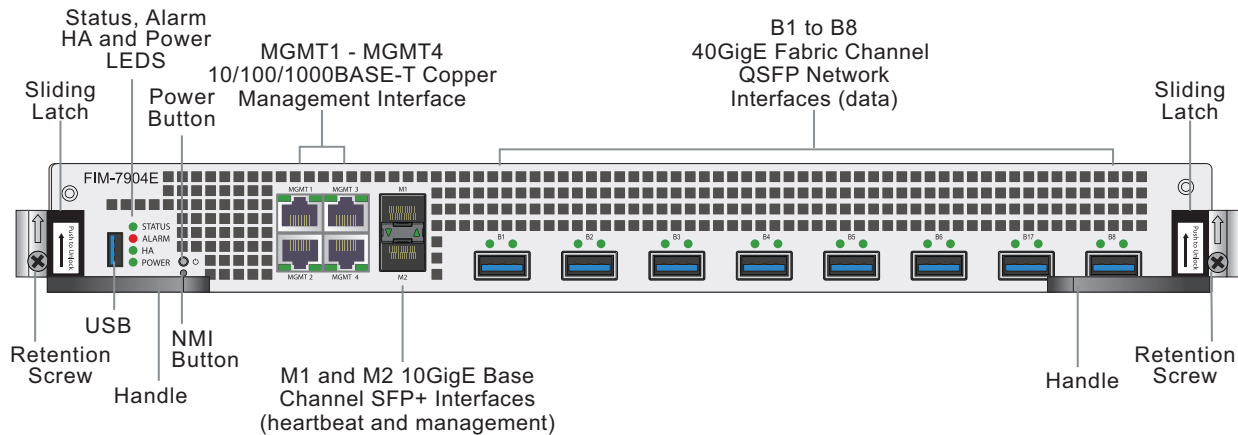
FIM-7904E interface module

The FIM-7904E interface module is a hot swappable module that provides data, management and session sync/heartbeat interfaces, base backplane switching and fabric backplane session-aware load balancing for a FortiGate-7000 series chassis. The FIM-7904E includes an integrated switch fabric and DP2 processors to load balance millions of data sessions over the chassis fabric backplane to FPM processor modules.

The FIM-7904E can be installed in any FortiGate-7000 series chassis. Normally you would install two FIM-7904E modules in chassis hub/switch slots 1 and 2. Two FIM-7904Es provide a total of eight Quad Small Form-factor Pluggable plus (QSFP+) interfaces for a FortiGate-7000 chassis. Using a 40GBASE-SR10 multimode QSFP+ transceiver, each QSFP+ interface can also be split into four 10GBASE-SR interfaces.

You can also install FIM-7904Es in a second chassis and operate the chassis in HA mode with another set of processor modules to provide chassis failover protection.

FIM-7904E front panel



The FIM-7904E includes the following hardware features:

- Eight front panel 40GigE QSFP+ fabric channel interfaces (B1 to B8). These interfaces are connected to 40Gbps networks to distribute sessions to the FPM processor modules installed in chassis slots 3 and up. Using 40GBASE-SR10 multimode QSFP+ transceivers, each QSFP+ interface can also be split into four 10GBASE-SR interfaces. These interfaces also support creating link aggregation groups (LAGs) that can include interfaces from both FIM-7904Es.
- Two front panel 10GigE SFP+ interfaces (M1 and M2) that connect to the base backplane channel. These interfaces are used for heartbeat, session sync, and management communication between FIM-7904Es in different chassis. These interfaces can also be configured to operate as Gigabit Ethernet interfaces using SFP transceivers, but should not normally be changed. If you use switches to connect these interfaces, the switch ports should be able to accept packets with a maximum frame size of at least 1526. The M1 and M2 interfaces need to be on different broadcast domains. If M1 and M2 are connected to the same switch, Q-in-Q must be enabled on the switch.
- Four 10/100/1000BASE-T out of band management Ethernet interfaces (MGMT1 to MGMT4).
- One 80Gbps fabric backplane channel for traffic distribution with each FPM module installed in the same chassis as the FIM-7904E.

- One 1Gbps base backplane channel for base backplane with each FPM module installed in the same chassis as the FIM-7904E.
- One 40Gbps fabric backplane channel for fabric backplane communication with the other FIM-7904E in the chassis.
- One 1Gbps base backplane channel for base backplane communication with the other FIM-7904E in the chassis.
- On-board DP2 processors and an integrated switch fabric to provide high-capacity session-aware load balancing.
- One front panel USB port.
- Power button.
- NMI switch (for troubleshooting as recommended by Fortinet Support).
- Mounting hardware.
- LED status indicators.

Physical Description

Dimensions	1.2 x 11.34 x 14 in. (3.1 x 28.8 x 35.1 cm) (Height x Width x Depth)
Weight	7.2 lb. (3.23 kg)
Operating Temperature	32 to 104°F (0 to 40°C)
Storage Temperature	-31 to 158°F (-35 to 70°C)
Relative Humidity	10% to 90% (Non-condensing)

Front panel LEDs

From the FIM-7904E front panel you can view the status of the module LEDs to verify that the module is functioning normally.

LED	State	Description
STATUS	Off	The FIM-7904E is powered off.
	Green	The FIM-7904E is powered on and operating normally.
	Flashing Green	The FIM-7904E is starting up.
ALARM	Red	Major alarm.
	Amber	Minor alarm
	Off	No alarms

LED	State	Description
HA	Off	The FIM-7904E is operating in normal mode.
	Green	The FIM-7904E is operating in HA mode.
	Red	A failover has occurred
POWER	Green	The FIM-7904E is powered on and operating normally.
	Off	The FIM-7904E is powered off.
B1 to B8	Green	The correct cable is connected to the interface and the connected equipment has power and is connected at 40Gbps or 10Gbps. If the port is split the LED will light as long as at least one of the 10 Gbps connections is active.
	Flashing Green	40 Gbps or 10Gbps network activity at the interface.
	Off	No link is established.
M1 and M2	Green	The correct cable is connected to the interface and the connected equipment has power.
	Flashing Green	Network activity at the interface.
	Off	No link is established.
MGMT1-4 Link/Act	Solid Green	Indicates this interface is connected with the correct cable and the attached network device has power.
	Blinking Green	Indicates network traffic on this interface.
	Off	No Link
MGMT1-4 Speed	Green	Connection at 1Gbps.
	Amber	Connection at 100Mbps.
	Off	Connection at 10Mbps.

Front panel connectors

You connect the FIM-7904E to your 100Gbps networks using the C1 to C4 front panel CFP2 interfaces. The front panel also includes M1 and M2 SFP+ interfaces for the base channel, four Ethernet management interfaces

(MGMT1 to MGMT4), and a USB port. The USB port can be used with any USB key for backing up and restoring configuration files.

Connector	Type	Speed	Protocol	Description
USB	USB 3.0 Type A		USB 3.0 USB 2.0	Standard USB connector.
B1 to B8	QSFP+	40Gbps/10Gbps	Ethernet	40GbE connections using 40GBASE-SR/LR Transceivers or 4x10GbE connections using breakout cables.
M1 and M2	SFP+	10Gbps/1Gbps	Ethernet	10GbE connection (using SFP transceiver). For heartbeat and synchronization between chassis. 1GbE not recommended.
MGMT1 to MGMT4	RJ-45	10/100/1000Mbps	Ethernet	10/100/1000BASE-T copper connection for management or system administration.

Supported transceivers and breakout cables

Transceivers available from Fortinet for the FIM-7904E B1 to B8 QSFP+ interfaces.

Transceiver	Description
FG-TRAN-QSFP+SR	40GE QSFP+ transceivers, short range.
FG-TRAN-QSFP+LR	40GE QSFP+ transceivers, long range.

Breakout cables available from Fortinet for the FIM-7904E B1 to B8 QSFP+ interfaces.

Breakout	Description
FG-TRAN-QSFP-4XSFP	40GE QSFP+ Parallel Breakout Active Optical Cable with 1m length.
FG-TRAN-QSFP-4SFP-5	40GE QSFP+ Parallel Breakout MPO to 4x LC connectors, 5m reach.

Splitting the FIM-7904E B1 to B8 interfaces

Each 40GE interface (B1 to B8) on the FIM-7904Es in slot 1 and slot 2 of a FortiGate-7000 system can be split into 4x10GBE interfaces. You split these interfaces after the FIM-7904Es are installed in your FortiGate-7000 system and the system is up and running. You can split the interfaces of the FIM-7904Es in slot 1 and slot 2 at the same time by entering a single CLI command. Splitting the interfaces requires a system reboot so Fortinet recommends that you split multiple interfaces at the same time according to your requirements to avoid traffic disruption.

For example, to split the B1 interface of the FIM-7904E in slot 1 (this interface is named 1-B1) and the B1 and B4 interfaces of the FIM-7904E in slot 2 (these interfaces are named 2-B1 and 2-B4) connect to the CLI of your FortiGate-7000 system using the management IP and enter the following command:

```
config system global
    set split-port 1-B1 2-B1 2-B4
end
```

After you enter the command, the FortiGate-7000 reboots and when it comes up:

- The 1-B1 interface will no longer be available. Instead the 1-B1/1, 1-B1/2, 1-B1/3, and 1-B1/4 interfaces will be available.
- The 2-B1 interface will no longer be available. Instead the 2-B1/1, 2-B1/2, 2-B1/3, and 2-B1/4 interfaces will be available.
- The 2-B4 interface will no longer be available. Instead the 2-B4/1, 2-B4/2, 2-B4/3, and 2-B4/4 interfaces will be available.

You can now connect breakout cables to these interfaces and configure traffic between them just like any other FortiGate interface.

Turning the module on and off

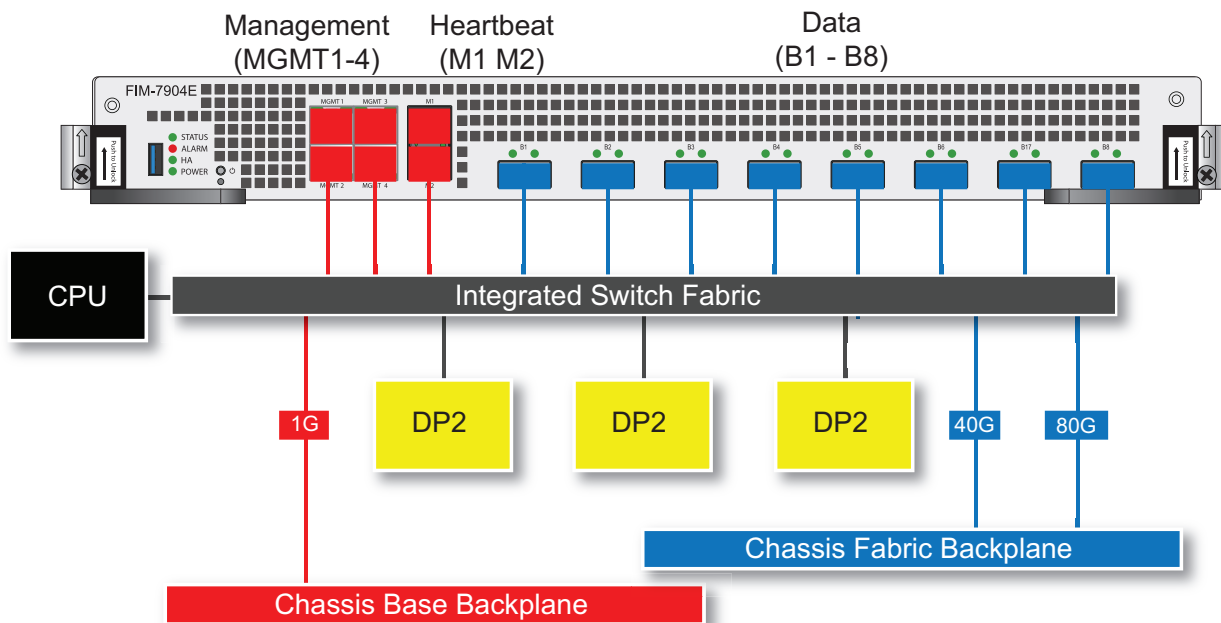
You can use the front panel power button to turn the module power on or off. If the module is powered on, press the power switch to turn it off. If the module is turned off and installed in a chassis slot, press the power button to turn it on.

NMI switch

When working with Fortinet Support to troubleshoot problems with the FIM-7904E you can use the front panel non-maskable interrupt (NMI) switch to assist with troubleshooting. Pressing this switch causes the software to dump registers/backtraces to the console. After the data is dumped the board reboots. While the board is rebooting, traffic is temporarily blocked. The board should restart normally and traffic can resume once its up and running.

FIM-7904E hardware architecture

The FIM-7904E includes an integrated switch fabric (ISF) that connects the front panel interfaces to the DP2 session-aware load balancers and to the chassis backplanes. The ISF also allows the DP2 processors to distribute sessions among all NP6 processors on the FPM modules in the same chassis.

FIM-7904E hardware architecture

Hardware installation

This chapter describes installing a FIM-7904E interface module into a FortiGate-7000 chassis.

Installing QSFP+, SFP+, and SFP transceivers

You must install QSFP+ transceivers into the FIM-7904E B1 to B8 interfaces before connecting them to 40Gbps networks. See [FIM-7904E front panel on page 4](#) for the locations of the B1 to B8 interfaces. You can install the QSFP+ transceivers before or after inserting the FIM-7904E module into a chassis.

You must install SFP+ transceivers into the FIM-7904E M1 and M2 interfaces before connecting them to 10Gbps networks. The FIM-7904E ships with two 10GBASE-SR SFP+ transceivers. You can also configure the M1 and M2 interfaces to operate at 1Gbps and install SFP transceivers. You can install these transceivers before or after inserting the FIM-7904E board into a chassis.

You can install the following types of transceivers for connectors M1 and M2:

- 10GBASE-SR SFP+ (10Gbps)
- 10GBASE-LR SFP+ (10Gbps)
- 1000BASE SFP (1Gbps)



The M1 and M2 interfaces are used for heartbeat, session sync, and management communication between FIM-7904Es in different chassis. This communication requires 10 Gbps connections so, even though it supported, the M1 and M2 interfaces should not be changed to 1000Base SFP 1Gbps interfaces.

To install transceivers

To complete this procedure, you need:

- A FIM-7904E
- Transceivers to install
- An electrostatic discharge (ESD) preventive wrist strap with connection cord



FIM-7904Es must be protected from static discharge and physical shock. Only handle or work with FIM-7904Es at a static-free workstation. Always wear a grounded electrostatic discharge (ESD) preventive wrist strap when handling FIM-7904Es.



Handling the transceivers by holding the release latch can damage the connector. Do not force transceivers into their cage slots. If the transceiver does not easily slide in and click into place, it may not be aligned correctly. If this happens, remove the transceiver, realign it and slide it in again.

1. Attach the ESD wrist strap to your wrist and to an available ESD socket or wrist strap terminal.
2. Remove the caps from the cage sockets on the FIM-7904E front panel.

3. Hold the sides of the transceiver and slide it into the cage socket until it clicks into place.

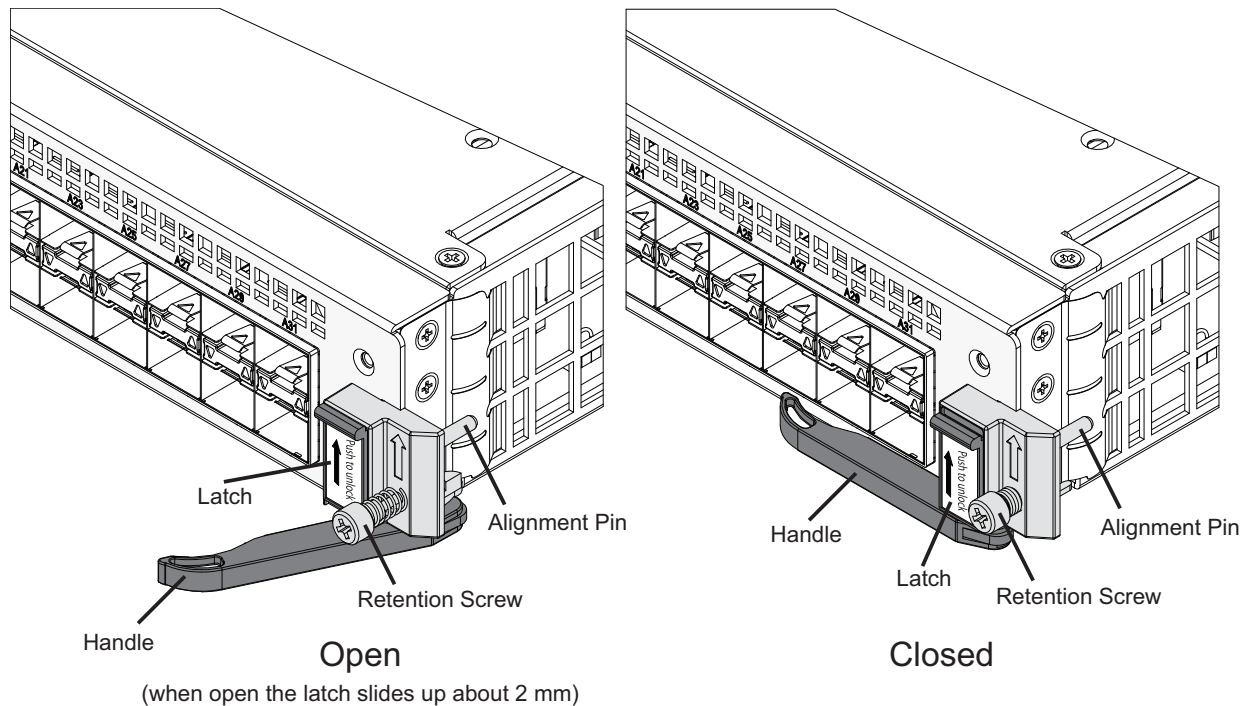
FIM-7904E mounting components

To install a FIM-7904E you slide the module into a hub/switch slot in the front of an FortiGate-7000 series chassis (either slot 1 or 2) and then use the mounting components to lock the module into place in the slot. When locked into place and positioned correctly the module front panel is flush with the chassis front panel. The module is also connected to the chassis backplane.

To position the module correctly you must use the mounting components shown below for the right of the FIM-7904E front panel. The mounting components on the left of the front panel are the same but reversed. The FIM-7904E mounting components align the module in the chassis slot and are used to insert and eject the module from the slot.



On some FIM modules there may be very little clearance between the front panel interfaces and the handle on the right side of the FIM-7904E. In fact you may have to remove network connectors from some front panel interfaces to open the handle. In most cases you should remove all network connectors from the front panel before opening the handles to remove a FIM module from a chassis slot.



The FIM-7904E handles align the module in the chassis slot and are used to insert and eject the module from the slot. The latches activate micro switches that turn on or turn off power to the module. When both latches are raised the module cannot receive power. When the latches are fully closed if the module is fully inserted into a chassis slot the module can receive power.

Inserting a FIM-7904E module into a chassis

This section describes how to install an FIM-7904E module into a FortiGate-7000 series chassis hub/switch slot (slot 1 or 2).



You must carefully slide the module all the way into the chassis slot, close the handles to seat the module into the slot, and tighten the retention screws to make sure the module is fully engaged with the backplane and secured. You must also make sure that the sliding latches are fully closed by gently pushing them down. The handles must be closed, the retention screws tightened and the latches fully closed for the module to get power and start up. If the module is not receiving power all LEDs remain off.

FIM-7904Es are hot swappable. The procedure for inserting a FIM-7904E into a chassis slot is the same whether or not the chassis is powered on.

To insert a FIM-7904E into a chassis slot



Do not carry the FIM-7904E by holding the handles or retention screws. When inserting or removing the FIM-7904E from a chassis slot, handle the module by the front panel. The handles are not designed for carrying the board. If the handles become bent or damaged the FIM-7904E may not align correctly in the chassis slot.

To complete this procedure, you need:

- A FIM-7904E
- A FortiGate-7000 chassis with an empty hub/switch slot
- An electrostatic discharge (ESD) preventive wrist strap with connection cord



FIM-7904Es must be protected from static discharge and physical shock. Only handle or work with FIM-7904Es at a static-free workstation. Always wear a grounded electrostatic discharge (ESD) preventive wrist strap when handling FIM-7904Es. Attach the ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame. (An ESD wrist strap is not visible in the photographs below because they were taken in an ESD safe lab environment.)

1. Remove the FIM-7904E module from its packaging. Align the module with the chassis slot and slide the module part way into the slot.

In the photograph an example FIM-7904E is being installed into chassis slot 1 of a FortiGate-7040E chassis.



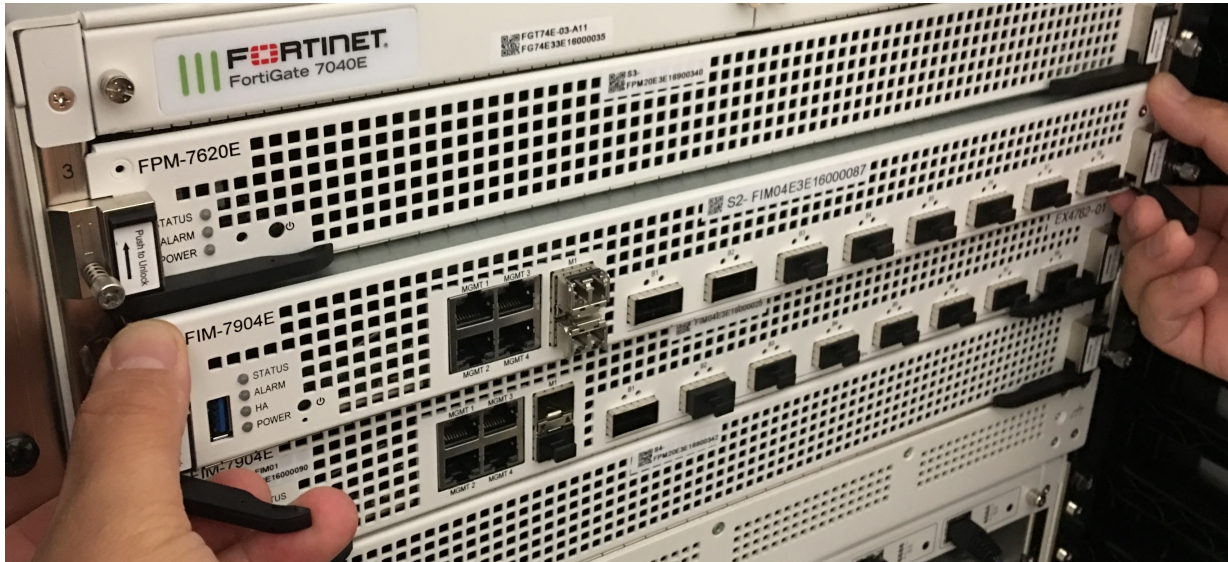
2. Unlock the left and right handles by pushing the handle latches up about 2 mm until the handles pop open.

Fully open both handles before sliding the module into the chassis to avoid damaging the handle mechanism. Damaging the handles may prevent the module from connecting to power.



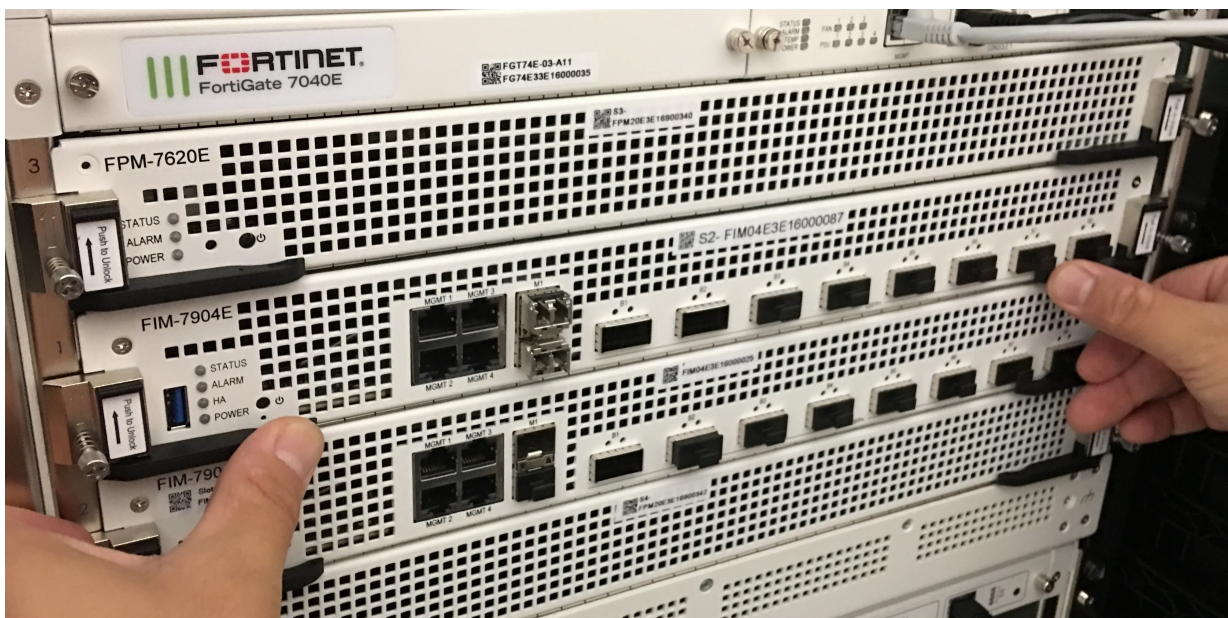
3. Carefully slide the module into the slot until the handles engage with the sides of the chassis slot, partially closing them.

Insert the module by applying moderate force to the front faceplate (not the handles) to slide the module into the slot. The module should glide smoothly into the chassis slot. If you encounter any resistance while sliding the module in, the module could be aligned incorrectly. Pull the module back out and try inserting it again.



4. Push both handles closed and close the latches.

Closing the handles draws the module into place in the chassis slot and into full contact with the chassis backplane. The module front panel should be in contact with the chassis front panel and the latches should drop down and lock into place. You should gently push the latches down to make sure they lock. The module will not receive power until the latches are fully locked.



5. Tighten both retention screws to secure the module in the chassis.

You can tighten the retention screws by hand with a Phillips screwdriver. If you use a power screwdriver the tightening torque needs to be adjusted between 3 In-lb to 4 In-lb (0.4 N-m to 0.48 N-m).



As the latches are locked, power is supplied to the module. If the chassis is powered on during insertion the status LED flashes green as the module starts up. Once the module has started up and is operating correctly, the front panel LEDs are lit for normal operation.

Normal LED operation

LED	State
Status	Green
Alarm	Off
HA	Off
Power	Green

Shutting down and removing a FIM-7904E board from a chassis

To avoid potential hardware problems, always shut down the FIM-7904E operating system properly before removing the FIM-7904E from a chassis slot or before powering down the chassis.

Disconnect all cables from the FIM-7904E module, including all network cables and USB cables or keys.

FIM-7904Es are hot swappable. The procedure for removing a FIM-7904E from a chassis slot is the same whether or not the chassis is powered on.

To remove a FIM-7904E board from a chassis slot



Do not carry the FIM-7904E by holding the handles or retention screws. When inserting or removing the FIM-7904E from a chassis slot, handle the module by the front panel. The handles are not designed for carrying the board. If the handles become bent or damaged the FIM-7904E may not align correctly in the chassis slot.

To complete this procedure, you need:

- A FortiGate-7000 chassis with a FIM-7904E module installed
- An electrostatic discharge (ESD) preventive wrist strap with connection cord



FIM-7904Es must be protected from static discharge and physical shock. Only handle or work with FIM-7904Es at a static-free workstation. Always wear a grounded electrostatic discharge (ESD) preventive wrist strap when handling FIM-7904Es. (An ESD wrist strap is not visible in the photographs below because they were taken in an ESD safe lab environment.)

1. Fully loosen the retention screws.

You must fully loosen the screws or the handles may be damaged when used to eject the board from the chassis slot.



2. Unlock the left and right handles by pushing the latches up about 2 mm until the handles pop open.

Pushing the latches up turns off the module's power.



3. Fully open the handles to eject the module from the chassis.

You need to open the handles with moderate force to eject the module from the chassis.



4. Hold the module front panel sides and slide it part way out of the slot. Then grasp the module by the sides and carefully slide it out of the slot.



Troubleshooting

This section describes some common troubleshooting topics:

FIM-7904E does not startup

Positioning of FIM-7904E mounting components and a few other causes may prevent a FIM-7904E from starting up correctly.

Latches and handles not fully closed

If the latches or handles are damaged or positioned incorrectly the FIM-7904E may not start up. Make sure the latches are fully closed and the handles are correctly aligned, fully inserted and locked and the retention screws are tightened.

Firmware problem

If the FIM-7904E is receiving power and the latches and handles are fully closed, and you have restarted the chassis and the FIM-7904E still does not start up, the problem could be with FortiOS. Connect to the FIM-7904E console and try cycling the power to the board. If the BIOS starts up, interrupt the BIOS startup and install a new firmware image.

If this does not solve the problem, contact Fortinet Technical Support.

FIM-7904E status LED is flashing during system operation

Normally, the FIM-7904E Status LED is off when the FIM-7904E is operating normally. If this LED starts flashing while the module is operating, a fault condition may exist. At the same time the FIM-7904E may stop processing traffic.

To resolve the problem you can try removing and reinserting the FIM-7904E in the chassis slot. Reloading the firmware may also help.

If this does not solve the problem there may have been a hardware failure or other problem. Contact Fortinet Technical Support for assistance.

Quick FIM-7904E configuration

This section is a quick start guide to connecting and configuring a FIM-7904E for your network.

Before using this chapter, your FortiGate chassis should be mounted and connected to your power system. In addition, your FIM-7904Es should be inserted into the chassis in slots 1 or 2 and one or more processor modules should be installed in chassis slots 3 and up. The chassis and the modules should also be powered up and the front panel LEDs should indicate that the modules are functioning normally. As well the FIM-7904E and the processor modules should be running the same FortiOS firmware version.

Registering your FortiGate-7000 series products

FortiGate-7000 series products are registered according to the chassis serial number. You need to register your chassis to receive Fortinet customer services such as product updates and customer support. You must also register your product for FortiGuard services. Register your product by visiting <https://support.fortinet.com>. To register, enter your contact information and the serial numbers of the Fortinet products that you or your organization have purchased.

Choosing the configuration tool

You can use either the GUI or the Command Line Interface (CLI) to configure the FIM-7904E. Some basic configuration settings can only be done from the CLI. You can connect to the GUI using HTTP or HTTPS, You can connect to the CLI using SSH or Telnet or by a direct console connection to the FIM-7904E Console port. Use a terminal emulator with the following settings to connect to the console port: bits per second: 9600, data bits: 8, parity: none, stop bits: 1, flow control: none.

Changing network settings

The FIM-7904E ships with the following factory default configuration.

Option	Default Configuration
Administrator Account User Name	admin
Password	(none)
MGMT1 to MGMT 4 IP/Netmask	192.168.1.99/24

MGMT 1 to MGMT 4 of each FIM-7904E are configured as a static aggregate interface called mgmt and all have the same IP address. If you have two FIM modules installed in your chassis, then MGMT 1 to MGMT 4 of both modules are all in the same static aggregate interface.

At any time during the configuration process, if you run into problems, you can reset the FIM-7904E to the factory defaults and start over. From the CLI enter `execute factoryreset`.

Connect to the GUI by connecting MGMT1 of the module in slot 1 to your network and browsing to <https://192.168.1.99>. Log into the GUI using the admin account with no password. Go to Network > Interface and configure the FIM-7904E interfaces to connect to your network.

Cautions and Warnings

Environmental Specifications

Rack Mount Instructions - The following or similar rack-mount instructions are included with the installation instructions:

Instructions de montage en rack - Les instructions de montage en rack suivantes ou similaires sont incluses avec les instructions d'installation:

Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.

Température ambiante élevée – S'il est installé dans un rack fermé ou à unités multiples, la température ambiante de fonctionnement de l'environnement du rack peut être supérieure à la température ambiante de la pièce. Par conséquent, il est important d'installer le matériel dans un environnement respectant la température ambiante maximale (T_{ma}) stipulée par le fabricant.

Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Ventilation réduite – Installation de l'équipement dans un rack doit être telle que la quantité de flux d'air nécessaire au bon fonctionnement de l'équipement n'est pas compromise.

Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Chargement Mécanique – Montage de l'équipement dans le rack doit être telle qu'une situation dangereuse n'est pas liée à un chargement mécanique inégal.

Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Surtension – Il convient de prendre l'ensemble des précautions nécessaires lors du branchement de l'équipement au circuit d'alimentation et être particulièrement attentif aux effets de la suralimentation sur le dispositif assurant une protection contre les courts-circuits et le câblage. Ainsi, il est recommandé de tenir compte du numéro d'identification de l'équipement.

Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Fiabilité de la mise à la terre – Fiabilité de la mise à la terre de l'équipement monté en rack doit être maintenue. Une attention particulière devrait être accordée aux connexions d'alimentation autres que les connexions directes au circuit de dérivation (par exemple de l'utilisation de bandes de puissance).

Blade Carriers, Cards and Modems must be Listed Accessories or Switch, Processor, Carrier and similar blades or cards should be UL Listed or Equivalent.

Serveur-blades, cartes et modems doivent être des accessoires listés ou commutateurs, processeurs, serveurs et similaire blades ou cartes doivent être listé UL ou équivalent.

Refer to specific Product Model Data Sheet for Environmental Specifications (Operating Temperature, Storage Temperature, Humidity, and Altitude).

Référez à la Fiche Technique de ce produit pour les caractéristiques environnementales (Température de fonctionnement, température de stockage, humidité et l'altitude).

Safety

Moving parts — Hazardous moving parts. Keep away from moving fan blades.

Pièces mobiles – Pièces mobiles dangereuses. Se tenir éloigné des lames mobiles du ventilateur.

Warning: Equipment intended for installation in Restricted Access Location.

Avertissement: Le matériel est conçu pour être installé dans un endroit où l'accès est restreint.

Warning: A readily accessible disconnect device shall be incorporated in the building installation wiring.

Avertissement: Un dispositif de déconnexion facilement accessible doit être incorporé dans l'installation électrique du bâtiment.

Battery – Risk of explosion if the battery is replaced by an incorrect type. Do not dispose of batteries in a fire. They may explode. Dispose of used batteries according to your local regulations. IMPORTANT: Switzerland: Annex 4.10 of SR814.013 applies to batteries.

Batterie – Risque d'explosion si la batterie est remplacée par un type incorrect. Ne jetez pas les batteries au feu. Ils peuvent exploser. Jetez les piles usagées conformément aux réglementations locales. IMPORTANT: Suisse: l'annexe 4.10 de SR814.013 s'appliquent aux batteries.

警告

本電池如果更換不正確會有爆炸的危險
請依製造商說明書處理用過之電池

Caution: Disconnect power supply cords before servicing

Attention: Débranchez les cordons de la source d'alimentation avant tout entretien.

Grounding — To prevent damage to your equipment, connections that enter from outside the building should pass through a lightning / surge protector, and be properly grounded. Use an electrostatic discharge workstation

(ESD) and/or wear an anti-static wrist strap while you work. In addition to the grounding terminal of the plug, on the back panel, there is another, separate terminal for earthing.

Mise à la terre — Pour éviter d'endommager votre matériel, assurez-vous que les branchements qui entrent à partir de l'extérieur du bâtiment passent par un parafoudre / parasurtenseur et sont correctement mis à la terre. Utilisez un poste de travail de décharge électrostatique (ESD) et / ou portez un bracelet anti-statique lorsque vous travaillez. Ce produit possède une borne de mise à la terre qui est prévu à l'arrière du produit, à ceci s'ajoute la mise à la terre de la prise.

This product has a separate protective earthing terminal provided on the back of the product in addition to the grounding terminal of the attachment plug. This separate protective earthing terminal must be permanently connected to earth with a green with yellow stripe conductor minimum size # 6 AWG and the connection is to be installed by a qualified service personnel.

Ce produit a une borne de mise à la terre séparé sur le dos de l'appareil, en plus de la borne de mise à la terre de la fiche de raccordement. Cette borne de mise à la terre séparée doit être connecté en permanence à la terre avec un conducteur vert avec la taille bande jaune de minimum # 6 AWG et la connexion doit être installé par un personnel qualifié.

Caution: Slide/rail mounted equipment is not to be used as a shelf or a work space.

Attention: Un équipement monté sur bâti ne doit pas être utilisé sur une étagère ou dans un espace de travail.

Fiber optic transceiver must be rated 3.3V, 22mA max, Laser Class 1, UL certified component.

Le transceiver optique doit avoir les valeurs nominales de 3.3 V, maximum 22 mA, Laser Class 1, homologué UL.

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Regulatory Notices

Federal Communication Commission (FCC) – USA

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received; including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

WARNING: Any changes or modifications to this product not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Industry Canada Equipment Standard for Digital Equipment (ICES) – Canada

CAN ICES-3 (A) / NMB-3 (A)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Cet appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Conformity (CE) - EU

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.



Voluntary Control Council for Interference (VCCI) – Japan

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。VCCI-A

Product Safety Electrical Appliance & Material (PSE) – Japan

日本では電気用品安全法(PSE)の規定により、同梱している電源コードは本製品の専用電源コードとして利用し、他の製品に使用しないでください。

Bureau of Standards Metrology and Inspection (BSMI) – Taiwan

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

China

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。这种情况下，可能需要用户对其采取切实可行的措施。



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High Performance Network Security



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